

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Coming CHEN, et al

Serial No. Unassigned

Filed: November 21, 2001

For: METHOD OF FORMING PARTIAL
REVERSE ACTIVE MASK

Examiner: Unassigned

Art Unit: Unassigned

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
2900 Crystal Drive
Arlington, VA 22202-3513

Sir:

Please amend the copy of U.S. Patent Application Serial No.
09/535,251, filed herewith, as follows:

IN THE SPECIFICATION:

On page 1, lines 5–7, please amend the specification according to the
attached sheets.

IN THE CLAIMS

Please cancel claims 1–3 without prejudice to the subject matter
contained therein.

Please add claims 4–10 according to the attached sheets.

REMARKS

The amendment adds new claims 4–10 while canceling claims 1–3,
making claims 4–10 pending in the application. Support for the amendment
can be found in the parent application. No new matter has been added by the
amendment.

Please consider the pending claims in light of the references cited in
the enclosed Information Disclosure Statement. These references were

considered in the related applications U.S. Patent Application Serial No. 09/535,251, filed March 27, 2000 and U.S. Patent Application Serial No. 09/075,618, filed May 11, 1998.

William J. Kubida, et al (Customer No. 25235) was appointed the attorney of record in the copending parent case (U.S. Application Serial No. 09/535,251) in a power of attorney filed October 11, 2001 (a copy of which is included herewith). Please confirm that correspondence in this case should be directed to:

William J. Kubida, Reg. No. 29,664
HOGAN & HARTSON LLP
1200 17th Street, Suite 1500
Denver, Colorado 80202

In view of all of the above, claims 4-10 are believed to be allowable and the case in condition for allowance which action is respectfully requested. Should the Examiner be of the opinion that a telephone conference would expedite the prosecution of this case, the Examiner is requested to contact Applicants' attorney at the telephone number listed below.

Applicants enclose herewith the fee for filing a continuation application and believe this to be the only fee required for this amendment and response. Should any additional fees be required, please charge Deposit Account 50-1123.

Respectfully submitted,

November 21, 2001


Eugene J. Bernard, Reg. No. 42,320
HOGAN & HARTSON LLP
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone: (303) 454-2457
Facsimile: (303) 899-7333

MARKED-UP VERSION OF THE AMENDMENT

IN THE SPECIFICATION

[This application is a continuation in part of U.S. Patent Application Serial No. 09/075,618, filed May 11, 1998, which claimed the priority benefit of Taiwan application Serial no. 87105966, filed Apr. 18, 1998.] The present application is a continuation of copending U.S. Patent Application Serial No. 09/535,251, filed March 27, 2000, which is a continuation-in-part of U.S. Patent Application Serial No. 09/075,618, filed May 11, 1998, which claimed priority from Taiwan Application No. 87105966, filed April 18, 1998, all the disclosures of which are herein specifically incorporated by this reference.

CLEAN VERSION OF THE AMENDMENT

IN THE SPECIFICATION

The present application is a continuation of copending U.S. Patent Application Serial No. 09/535,251, filed March 27, 2000, which is a continuation-in-part of U.S. Patent Application Serial No. 09/075,618, filed May 11, 1998, which claimed priority from Taiwan Application No. 87105966, filed April 18, 1998, all the disclosures of which are herein specifically incorporated by this reference.

IN THE CLAIMS

4. (New) A method of chemical-mechanical polishing for forming a shallow trench isolation, wherein a substrate having a plurality of active regions, including a large active region and a small active region, is provided, comprising:

- forming a silicon nitride layer on the substrate;
- forming a shallow trench between the active regions;
- forming an oxide layer over the substrate, so that the shallow trench is filled therewith;

- removing the oxide layer on a central part of the large active region, whereas the oxide layer remains on an edge part of the large active region and on the small active region; and

- planarizing the remaining oxide layer until the oxide layer within the shallow trench has substantially the same level as the silicon nitride layer.

5. (New) The method according to claim 4, wherein the oxide layer is formed by high density chemical vapor deposition.

6. (New) The method according to claim 4, wherein a partial reverse active mask is formed to etch the central part of the oxide layer on the active region.

7. (New) The method according to claim 4, wherein the oxide layer is planarized by chemical-mechanical polishing.

8. (New) A method of chemical-mechanical polishing for forming a shallow trench isolation, wherein a substrate having a plurality of active regions, including a large active region and a small active region, is provided, comprising:

forming a silicon nitride layer on the substrate;

forming a shallow trench between the active regions;

forming an oxide layer over the substrate, so that the shallow trench is filled therewith;

forming a partial reverse active mask on the oxide layer, whereas the oxide layer on an edge part of the large active region and on the small active region are covered by the partial reverse active mask;

etching the oxide layer with the silicon nitride layer as a stop layer, using the partial reverse active mask as a mask; and

planarizing the oxide layer until the oxide layer within the shallow trench has substantially the same level as the silicon nitride layer.

9. (New) The method according to claim 8, wherein the oxide layer is formed by high density chemical vapor deposition.

10. (New) The method according to claim 8, wherein the oxide layer is planarized by chemical-mechanical polishing.